

THE MOFFAT FUEL SAVER

LIMITED

42 CENTRAL CHAMBERS
OTTAWA, CANADA

PRESENTED BY

JOHN MOFFAT, INVENTOR

*Address Berlin
and*

M

OT

THE
MOFFAT FUEL SAVER
LIMITED

MANUFACTURERS OF THE
MOFFAT FUEL SAVER,
SMOKE CONSUMER, and
BRIDGE WALL PROTECTOR

OTTAWA - - - - CANADA
Office - No. 42 Central Chambers

THE MOFFAT FUEL SAVER LIMITED.

THE MOFFAT FUEL SAVER, is simple in construction, and efficient in service.

THE MOFFAT, HAS NO COSTLY MECHANISM TO GET OUT OF ORDER.

THE MOFFAT, requires little attention, and therefore saves on cost of operation.

THE MOFFAT, will save from 10%, to 27% of fuel, and thus in a short time will pay for itself.

THE MOFFAT, as an economizer is the cheapest, and best on the market, the cost of installing being less than that of any other fuel saver, while the results are better.

THE MOFFAT, is practically indestructible, which cannot be claimed for any other system.

THE MOFFAT, depends solely upon good natural draft, and requires no forced draft, and loss of power to run it.

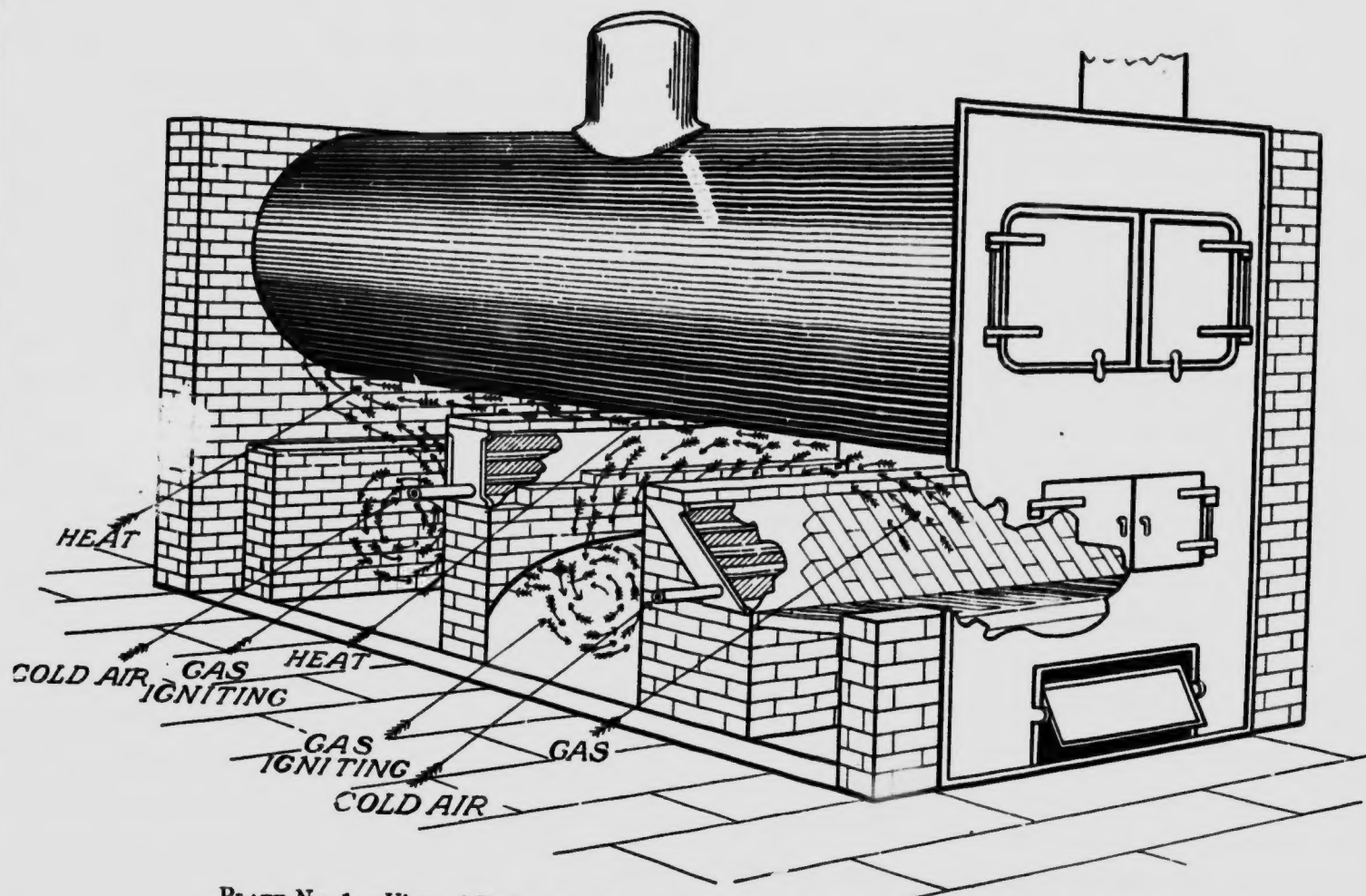


PLATE No. 1.—View of Boiler showing Moffat System in Bridge Wall and Baffle Wall.

Many Fuel Economizers are at present on the market, some good, more only fair, while others are absolutely useless.

THE MOFFAT Fuel Saver, is in a class of its own, having been proven more efficient than any other system, and the saving in fuel has been found by the use of the Moffat, to range from 10% to 27%.

WITHOUT,—the Moffat Fuel Saver, quantities of gas, and carbonaceous matter are carried unconsumed over the fire, and up the smoke stack, and are lost to the Manufacturer. In this way over 30% of fuel is wasted.

It has been found by actual tests that the oxygen admitted through the draft door in the front of the boiler, is all consumed in the fire box. The smoke, and gases as they are forced over the Bridge wall contain no oxygen, (without which they cannot be consumed) and therefore drift out of the smoke stack as combustible matter wasted. The Moffat Fuel Saver admits oxygen to the smoke, and gases, and the air intermingling with the gases, causes combustion, and a steady hot blue flame, is established the entire length of the boiler. The black carbon filled smoke which clings to the bottom of the boiler, and passing through the boiler tubes clogs them with soot, is largely consumed, and from front to rear the boiler receives an almost equal amount of heat.

The Moffat Fuel Saver admits the oxygen required into the smoke at a temperature of over six hundred degrees, through air chambers having a series of intercommunicating compartments as shown in Plates 2, and 4. The larger of these compartments placed in the Bridge wall as in Plates 1, and 3, while the smaller is placed in an auxiliary Bridge wall about 22 to 36 inches in the rear of the main Bridge wall known as the Baffle, wall and having an arched opening beneath, as shown in Plates 1, 3, and 4, while at the rear of the boiler is placed a dead wall, these three walls combining to make a series of combustion chambers.

Air is admitted to the bottom compartment of the air chamber, through a pipe, or aperture which leads through the brick wall to the outer air, as shown in Plates 1, and 4. This pipe is opened, and closed by means of a slide door. Apertures about an inch to two, and half inches in diameter, and 4, to 8 inches apart, are placed in the rear of the upper compartments of the two air chambers as shown in Plate 2, to allow the air to flow into the combustion chamber, and corresponding apertures are left in the brick work of the bridge wall, and Baffle wall. The system in the bridge wall is placed within 7 to 10 inches of the bottom of the boiler, while the system in the Baffle wall is built to within 3, to 4 inches of the boiler as shown in Plates 1, and 3. The Bridge wall is constructed

of fire brick laid on edge, with a thin coating of fire clay, while a layer of four inch brick is laid on top. With a fire burning briskly under the boiler, air is admitted to the system

Entering the pipe leading to the air chamber in the bridge wall, the air travels from the lower compartments, to the upper, attaining over six hundred degrees of heat. The air leaves the upper compartments through the openings in the rear, and encounters the smoke, and gases as they flow over the bridge wall, as shown in Plates 1, and 3. As the heated air enters the smoke, a combustion is formed, the gases igniting and forming a hot blue flame which travels along the bottom of the boiler, and over the Baffle wall. The heavier smoke containing the carbon, strikes against the Baffle wall and rebounds, intermingling with the air flowing from the system in the Bridge wall. The carbonaceous particles take fire, and being heavier than the gases, fall downward, where they are drawn through the arch, into the second combustion chamber, as shown in Plates 1, and 3.

The air admitted to the smoke from the Bridge wall system however, is insufficient to consume all the gases, and carbonaceous particles, and a further supply of air is necessary. This is admitted through the second system in the Baffle wall. The portion of the gases, and carbonaceous particles not consumed in the first combustion chamber, flow over the Baffle wall, and through the arch into the second combustion chamber, as shown in Plates 1, and 3. Here it mixes with fresh heated air flowing out through the openings in the

rear of the Baffle wall. and striking, and rebounding from the dead wall placed at the end of the boiler.

A through commingling of the gases, and superheated air occurs, and an almost perfect combustion is formed, the gases being entirely burned, and the carbon particles consumed.

Throughout the entire length of the boiler an even heat is maintained..

By the consumption of the gases, and particles of carbon in the smoke, less fuel is required to be placed on the grate bars. Where steam coal is used, the saving in fuel has been as high as 27%, where hard coal is burned from 10% to 25% is saved. The same saving is found with wood, sawdust, and oil. No matter what fuel is used gas is generated, and goes out of the smoke stack unconsumed WITHOUT THE MOFFAT. But the Moffat system allows of all these gases being consumed, and wherever it is in use, nothing but praise is heard. We claim that it is the most efficient Fuel Saver on the market, and guarantee satisfaction. Read what users say of the Moffat in the testimonials that follow.

TESTIMONIALS.

MAX. GOODRICH, Esq.,
Master Mechanic,
Ottawa, Ont.

OTTAWA, June 1st, 1905.

DEAR SIR:—

The test of coal consumption in the stationary boiler for two hours May 30th, I find 290 pounds of coal consumed against 318 pounds last test with the same amount of water evaporation.

Yours truly,

W. J. CLARK,
Gen. Foreman.

RUSSELL HOUSE,

Ottawa, March 15th, 1905.

Mr. JNO. MOFFAT,
Ottawa, Ont.

DEAR SIR:—

The three fuel savers and smoke consumers installed under our two boilers since last October, have given entire satisfaction. While I cannot say very accurately the amount of saving in fuel, I say that the abating of smoke from tests made, is all that you have claimed for it.

It, therefore, affords me great pleasure to recommend it to anyone who wants an efficient, cheap, and simple smoke consumer, requiring no other power for operation than what is provided by nature, viz: good natural draft.

In conclusion, I may state that it has protected the bridge walls so that they will not require any repairs this spring as usual.

Yours truly,

(Sgd.) FRANK ROBERT,
Chief Engineer,
Russell House Co.

THE MOFFAT FUEL SAVER, LIMITED.

9

JNO. MOFFAT, Esq.,
Ottawa, Ont.

HULL, October 6th, 1905.

DEAR SIR:—

Having been requested by you to express an opinion as to the efficiency of the Smoke Consumer and Bridge Wall Protector installed by you under two of our boilers as a fuel saving device, I may say that I have hesitated in doing so until I had made a test of them.

On October 4th and 5th, I endeavoured to conduct an impartial test and while not so complete as I would desire, is I think, sufficient to base an opinion on, I herewith submit a copy of the results obtained which I think should be satisfactory to yourself as well as to the Company I serve.

Test No. 1 made under boiler without consumer, made on October 4th:—

Coal burned.	2505 lbs.
Water evaporated.	19320 lbs.
Mean temperature of feed water.	143 degrees.
Equivalent evaporation of water at and from 212 degrees.	20653 lbs.
Evaporation of water per lb. of coal burned.	8.24 lbs.
Duration of test.	11 hours.
Steam pressure carried.	95 to 100 lbs.

Test No. 2 made under boiler with consumer:—

Coal burned.	2800 lbs.
Water evaporated.	26940 lbs.
Mean temperature of feed water.	115 degrees.
Equivalent evaporation of water at and from 212 degrees.	29575 lbs.
Evaporation of water per lb. of coal burned.	10.56 lbs.
Duration of test.	11 hours.
Steam pressure carried.	95 to 100 lbs.

Above results show an increased evaporation per lb. of coal burned of about 22%.

(Sgd.) F. J. MERRILL,

Engineer for "The Geo. Matthews Co. Ltd."

Hull.

THE MOFFAT FUEL SAVER, LIMITED.

Mr. JNO. MOFFAT,
Ottawa, Ont.

OTTAWA, Ont.. May 18, 1905.

DEAR SIR:—

The proposition you made to our management regarding the installing of your system, known as the "Moffat's Combination Fuel Saver, Smoke Consumer and Bridge Wall Protector, has been carried out thoroughly by our engineer in trust, as well as under my personal supervision, and I am pleased to state that your system has done all that you claimed for it, namely, that before installing your device, we made a test of two hours, by weighing coal, as well as taking an evaporation test of water used, and the following results were found.

Before installing your system we consumed 419 pounds of coal and evaporated 308 gallons of water. After installing your system a similar test was made, and I am pleased to say that we found a saving of 101 pounds of coal with evaporation the same as former test.

First smoke test six minutes, second test four minutes so the change made has given entire satisfaction, and we can recommend same.

Yours truly,

(Sgd.) MAX. GOODRICH,

Master Mechanic,
Ottawa & New York Ry.

I certify the above is correct.

(Sgd.) J. H. THOMPSON.

JOHN MOFFAT, Esq.,
Ottawa, Ont.

OTTAWA, Ont., October 19th, 1905.

DEAR SIR:—

The results from the use of the Moffat device for consuming smoke, and saving in coal consumption that you applied to the shop boiler of the Ottawa, and New York Railway at Ottawa, May 1900, have been satisfactory.

The several tests made as to coal consumption shows a saving through the use of the device of 27%.

Very truly,

H. W. GAYS,
General Manager,
Ottawa, & New York Ry.

THE MOFFAT FUEL SAVER, LIMITED.

11

AMERICAN BANK NOTE COMPANY.

OTTAWA, Ont., April 27th, 1905.

Mr. JNO. MOFFAT,
Ottawa, Ont.

DEAR SIR:—

We have very great pleasure in stating that we are more than pleased with the Smoke Consumer and fuel Economizer that you installed for us some months ago, as we are satisfied that it saves us a considerable amount of fuel each day, and has made a material difference in the smoke coming out of our chimney.

We, therefore, have no hesitation whatever in recommending it fully, and shall be very glad to have you refer possible customers to our plant.

Yours truly,

J. A. MACHADO,
Manager.

Alderman's Room,
City Hall,

OTTAWA, April 27th, 1905.

Mr. JNO. MOFFAT,
Ottawa, Ont.

DEAR SIR:—

The boiler improvement invented by you, combining fuel saver, smoke consumer, and bridge wall, protector, having been brought before the attention of the city, I desire to say as chairman of the property committee, that its advantages appear to be all that you claim.

While no prolonged test was carried on under my supervision, its operation has given every satisfaction, and I have no doubt the results will be fully up to my expectations.

Yours truly,

(Sgd.) SAM ROSENTHAL,
Chairman of the Property Committee.

THE MOFFAT FUEL SAVER, LIMITED.

CARLETON CHAMBERS,

OTTAWA, March 11th, 1905.

JNO. MOFFAT, Esq.,
Ottawa.

DEAR SIR:—

Your combination Fuel Saver, Smoke Consumer, and Bridge Wall Protector which you put in the Carleton Chambers last December has turned out highly satisfactory indeed; in fact, far beyond my expectations, and it now gives me great pleasure to write to you to this effect. In 1903 I burned 151 tons of hard coal, this year I will not burn that amount of soft coal. This I think, speaks for itself, and I cannot too highly recommend the above, and more especially do I wish to mention that I can without trouble keep the steam steadier than ever before, and with far less looking after.

I have had over 30 years experience in firing, and can thus speak from a practical standpoint.

Any person desiring to call at the Carleton Chambers to inspect the above, it will give me great pleasure to give them any information possible.

Yours very truly,

(Sgd.) G. H. COOK,
Engineer.

MESSRS. MOFFAT,

OTTAWA, May 2nd, 1905.

GENTLEMEN:—

I have great pleasure in recommending your Fuel Saver, Smoke Consumer, and Bridge Wall Protector. We have been using them for the last five months and cheerfully recommend them to all users of steam.

I am,

Yours truly,

(Sgd.) J. H. THOMPSON,

Chief Engineer,
Government Printing Bureau, Ottawa.

THE MOFFAT FUEL SAVER, LIMITED.

13

OTTAWA, Canada, 27-5m-05.

JNO. MOFFAT, Esq.,
Ottawa, Ont.

DEAR SIR:—

We have much pleasure in testifying to the great saving which was effected last winter through the installation of the Moffat Improvement to Boilers. The saving in coal, as compared to the previous winter's consumption was almost 20%, on addition to which the fire was more easily controlled, and steam obtained more quickly.

In view of the above experience we now give you an order to install in our new building which is now in course of construction, the same improvement in our new boilers which we trust you will have ready for us by November next.

Yours very truly,

WOODS LIMITED,

JAMES WOODS,
President.

73 SPARKS ST.,
OTTAWA, March 15th, 1905.

JNO. MOFFAT, Esq.,
Ottawa.

DEAR SIR:—

In regard to the fuel savers which I had installed last December I beg to say that they have given every satisfaction. The fuel account will be much less this year than for the corresponding months, last year.

Yours truly,

R. J. DEVLIN,

(Sgd.) per J. Lawson.

THE MOFFAT FUEL SAVER, LIMITED.

OTTAWA, Canada, April 22, 1905.

JNO. MOFFAT, Esq.
Berlin, Ont.

DEAR SIR:—

We are very pleased to state that your combination Fuel Saver, Smoke Consumer, and Bridge Wall Protector, that you recently installed in our two boilers, is giving great satisfaction, and our building superintendent reports that the boilers never worked more satisfactorily before. We are very much obliged to you for inducing us to install your system.

Yours truly,

THE OTTAWA CITIZEN COMPANY.

Wilson M. Southam.

WINCHESTER, Ont., March 3, 1905.

Mr. JNO. MOFFAT,
Ottawa, Ont.

DEAR SIR:—

In reference to the ventiduct you placed under our boiler a few months ago, we are pleased to state that it gives us good satisfaction.

In speaking to, our engineer, he states:

"That it is much easier to keep up steam at an even pressure, and with far less fuel." We have every confidence in it, and regret that we have not had it longer so we could state more fully the benefit to be gained by the installation of it.

Yours truly,

(Signed)

THE BEACH FOUNDRY COMPANY, LIMITED.

Per B. C. Beach, Mgr.

THE MOFFAT FUEL SAVER, LIMITED.

15

Letter to Mr. A. W. Fraser before the Moffat Fuel Saver, Limited; was formed.

A. W. FRASER, Esq.,
Lealie Chambers, Ottawa.

Ottawa, December 20th, 1905.

DEAR SIR:—

In compliance to your request to examine into, and report upon the merits of the Moffat Fuel Saver, Smoke Consumer, and Bridge Wall Protector, would say that I have examined a number plants installed in the city, and find them giving very satisfactory results, the saving in coal, which I consider to be the most important feature, varying from 15 to 20%, the variations being due to pressure, draught and the different conditions under which it is used.

I find that No. 5 size is the one most generally installed and the Geo. Matthews Co. Limited, in Hull, where two of this size are installed a careful test showed a saving of 22% in the amount of coal consumed by the use of the fuel saver.

This means that with coal costing \$6.00 per ton, its present price here, a saving of \$1.32 per ton, is effected. The average plant with a 75 H. P. Boiler uses $1\frac{1}{2}$ tons of coal per day. Allowing 300 working days to the year, the total amount saved by the use of a No. 5 Fuel Saver, would be \$594.00. As the cost of this size installed complete is small one can readily understand why there are as many used and sold here.

The invention has been in operation in the city for the past year and the users all express themselves as being quite satisfied with the saving effected.

Yours truly,

NEWTON J. KER,

City Engineer,
Ottawa.

Mr. JNO. MOFFAT,
Ottawa,

DEAR SIR:—

The Smoke Consumer installed by you has given very satisfactory results, and we take pleasure in recommending the device to those requiring same, as we find it a considerable saving in our fuel bill.

Yours truly,

THE OTTAWA FURNACE & FOUNDRY CO.

(Sgd.) J. MacCracken,
Sec.-Treas.

THE MOFFAT FUEL SAVER, LIMITED.

USERS OF THE MOFFAT FUEL SAVER IN OTTAWA.

NAME.	No. IN USE.	NAME.	No. IN USE.
Geo. Matthews Co. Ltd.	2	Government Printing Bureau.	4
Woods Ltd.	4	Carleton Chambers.	2
New York Central Railway.	1	Bryson, Graham & Co.	1
American Bank Note Co.	1	Victoria Chambers.	1
H. N. Bate & Sons	2	Imperial Furniture Co.	1
Ottawa Sanitary Laundry	2	Archibald Street Schools.	3
M. M. Pyke	1	Cartier Street Schools	9
Ottawa Furnace & Foundry Co..	1	J. R. Booth.	4
Ottawa Citizen Co. Ltd.	2	J. M. Garland & Sons.	1
Russell House.	3	Trust Building	2
R. J. Devlin.	2	Graham Bros.	1

SOME USERS OF THE MOFFAT FUEL SAVER IN THE VICINITY OF OTTAWA.

Cain Brick Co., Ottawa East.	2	Mulligan Brick Co., Hardford.	1
Baker Bros., Casselman.	2	Beach Furniture Co., Ltd., Winchester.	2
Merkeley Bros., Casselman.	2	Beach Foundry Co. Ltd., Winchester.	1
John Braithwaite, Chrysler.	1	Buckingham Graphite Co., Buckingham	2
Pembroke Water Works, Pembroke	2		

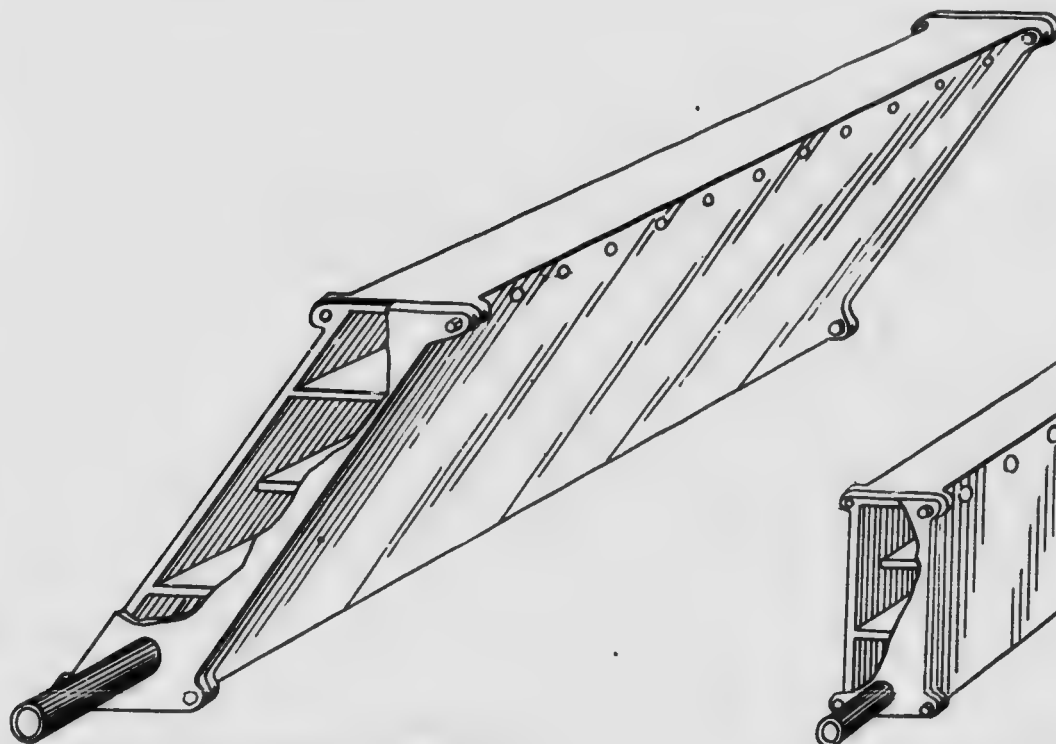
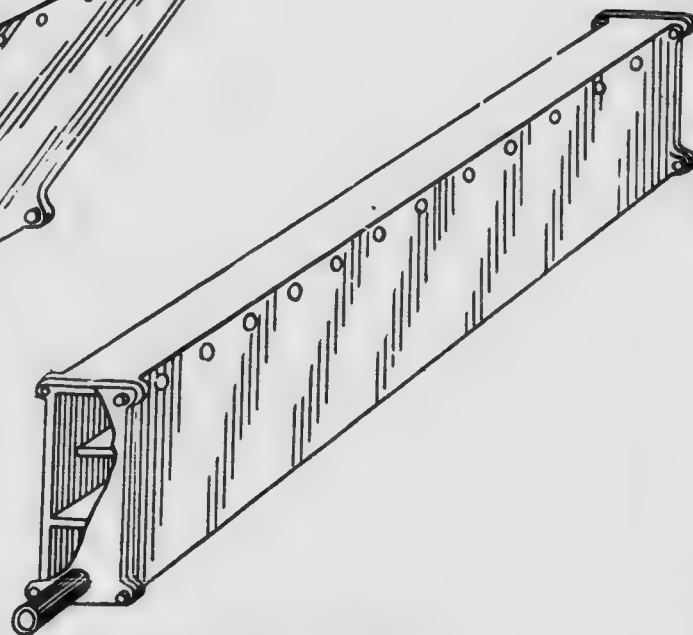


PLATE No. 2.—System for Bridge Wall.



System for Baffle Wall.

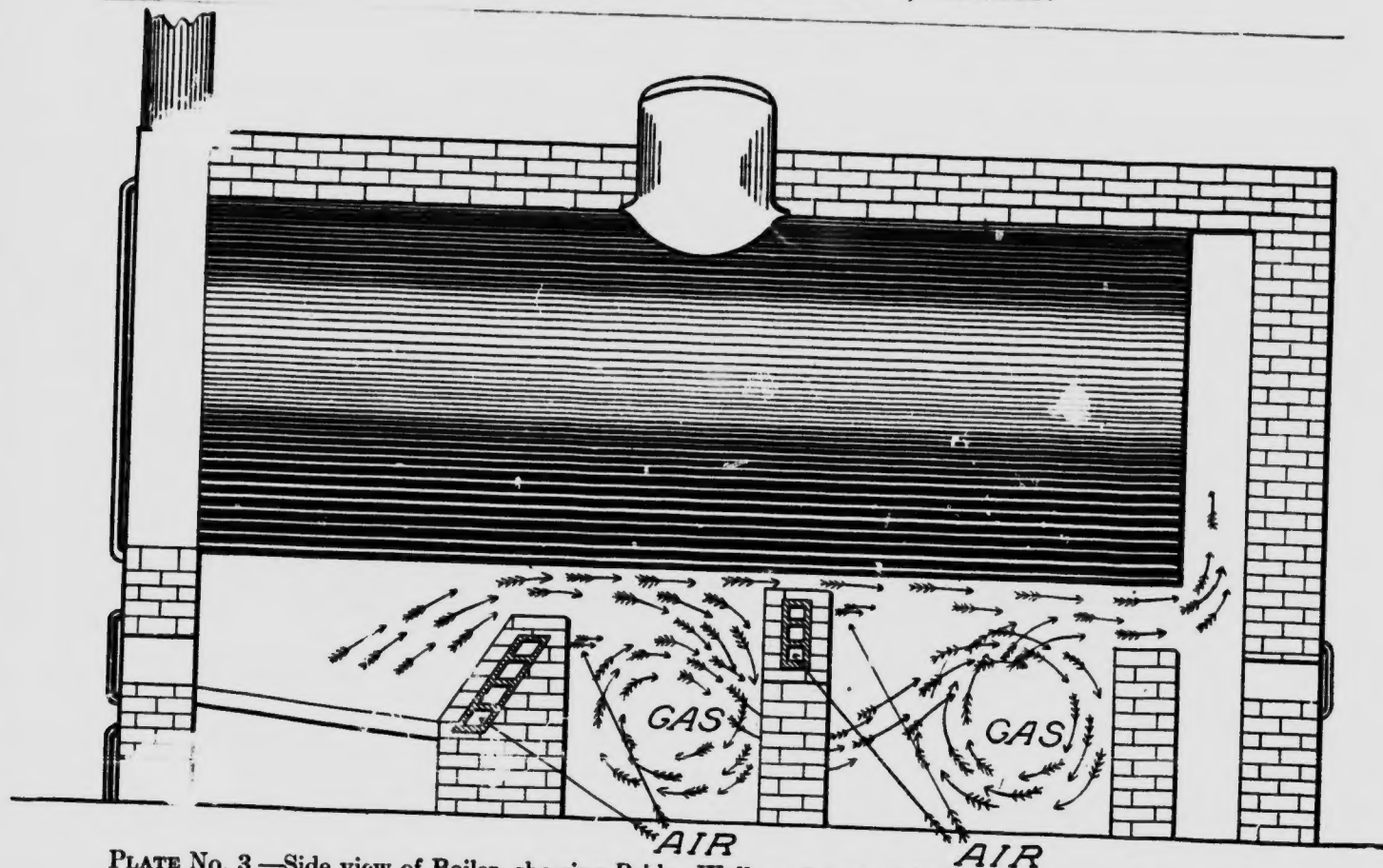


PLATE No. 3.—Side view of Boiler, showing Bridge Walls and Arched Baffle Wall, with system installed.

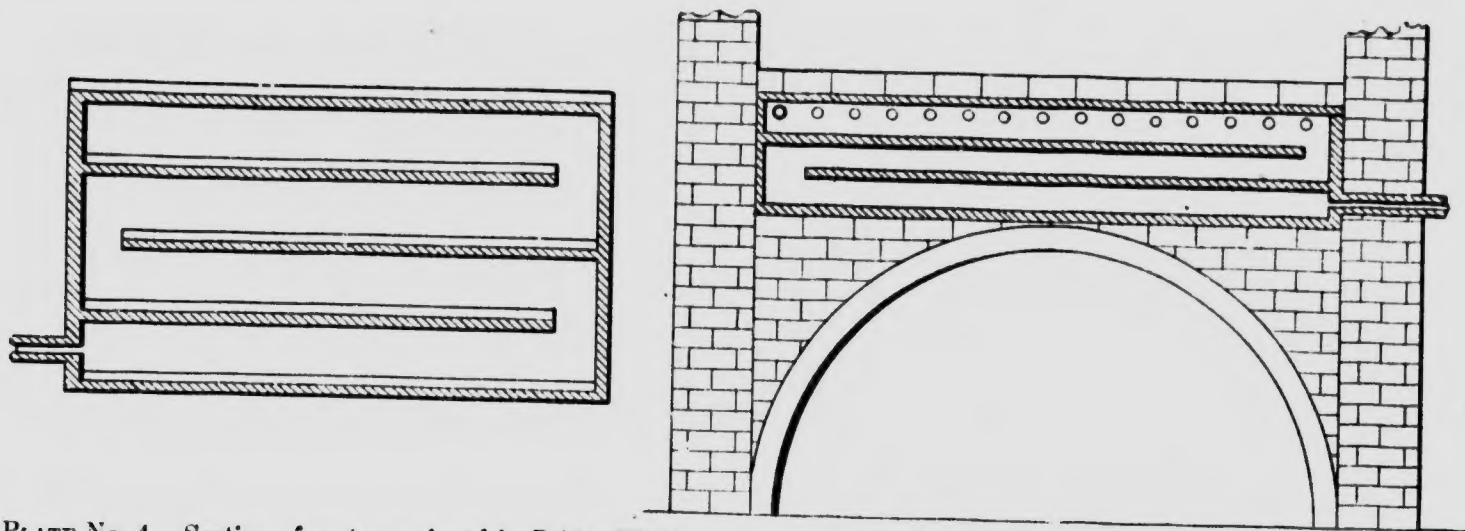


PLATE No. 4.—Section of systems placed in Bridge Walls.

Arched Baffle Wall with system installed.



